



polka dots (blobs, patches, etc.) of the non-continuous component surrounded (embedded) in the continuous component. The number and diameter of the inner tubes as well as the product flow rate through these tubes will determine the number, size, and distribution of the polka dotted food component within the food slice.

Slice Formation and Packaging

The components of the food slice are delivered directly into packaging film sleeve 34a during the extrusion process, as best shown in FIGURES 17 and 18. It is at this point that one of the slice's dimensions (length) is determined. The length of the finished product may range, for example, from 2.5" to 5.0". Alternatively, production machinery is available that determines both the length and the width of the slice at this point. Finished product dimensions may range from 2.5" x 2.5" to 4.5" x 5.0", for example.

Referring to FIGURE 7, immediately downstream from the extrusion manifold, the continuous band of filled packaging material passes through flattening belt portion 37 of packaging machine 25. It is at this point that the thickness of food slice 30 may be controlled. The thickness may be in the range from 0.125" to 0.375", for example.

In the preferred embodiment, and referring now to FIGURE 27-28, a bubble control device is used to control the amount of product that enters within the wrapping/packaging film. This device maintains a consistent weight of food product for each slice produced by the machine. Food portions are forced between the two layers

useful for this application, including: PLC (Allen Bradley SLC family or PLC 5 family processor and analog I/O, or equivalent); VFD (Magnetek 515 GPD or equivalent); LVDT (Lucas Schaevitz SN 8477, part No GCA-121-250); AC Motor (Baldor 2HP or equivalent size and brand; employs a gear reducer).

After the food slice has been sized to its desired thickness, it may pass into chilled water bath 50, as shown in FIGURES 7 and 20, where it may be cooled. Chilled water may also be provided by perforated water jets 160 prior to the flattening step, as shown in FIGURE 28. The temperature of this cooling bath determines the product handling characteristics later in the process. Those knowledgeable in the art will realize that the preferred bath temperature and corresponding finished product temperature is dependent upon the bath temperature and the amount of time the product is exposed to this temperature (residence time is proportional to line speed/throughput). The target temperature of a combined nut butter/jelly product, for example, as it exits the cooling bath is found to be optimal when it is in the range of about 50°-70°F. Other combined food products may require different cooling periods or, alternatively, ambient temperature cooling may be sufficient. A suitable roller system is provided for facilitating use of film 34 and the passage of ribbon 33 through the preferred individual wrap slice machine, as partially shown in FIGURES 20, and as well known.

Referring to FIGURE 7, after the wrapped ribbon 33 of product is cooled, the continuous web of packaging material encased product may pass through gripping belts 55a, and then through cleated drums 60a, 60b and 60c, where the cross-seals may be